

PATENT**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

RICHARD J. MARKLE ET AL

Group Art Unit: 2877

Serial No.: 09/897,573

Examiner: Z. Smith

Filed: 7/2/2001

Atty. Dkt. No.: 2000.089400

For: METHOD AND APPARATUS FOR
DETERMINING GRID DIMENSIONS
USING SCATTEROMETRY**DECLARATION UNDER 37 C.F.R. § 1.131 OF RICHARD J. MARKLE**

1. My name is Richard J. Markle. I have personal knowledge of the facts stated herein.

2. I am currently employed with Advanced Micro Devices, Inc. in Austin, Texas. I am a named inventor on application Serial No. 09/897,573 entitled "Method and Apparatus for Determining Grid Dimensions Using Scatterometry."

3. Attached as Exhibit A is a copy of the invention disclosure form I prepared in Austin, Texas for the invention described in the above-referenced patent application. I prepared and signed the invention disclosure form on November 2, 2000, as indicated by the date adjacent my signature.

4. The attached invention disclosure form was provided with internal tracking number TT4355 by AMD's legal department, and it was sent to the law firm of Williams, Morgan & Amerson on or about November 10, 2000, with a request to prepare a United States patent application for the invention disclosed in the invention form.

5. I understand that willful false statements and the like so made are punishable by fine or imprisonment, or both, and may jeopardize the validity of the application or any patent issuing thereon.

6. I declare under penalty of perjury that the foregoing is true and correct.

09 MAR 05

Date

Richard J. Markle

Richard J. Markle

2000.089400 TT4965



5204 E. Ben White Blvd.
Austin, TX 78741
Tel (512) 385-8542

10NO2000

J. MIKE AMERSON
WILLIAMS, MORGAN & AMERSON
7676 HILLMONT, SUITE 250
HOUSTON, TX 77040

RECEIVED

NOV 13 2000

WILLIAMS, MORGAN & AMERSON

RE: Invention Disclosure TT4355

Entitled:
GRATING STRUCTURES FOR USE IN SCATTEROMETRY FOR CONTACTS AND

Dear J. MIKE AMERSON:

2000.071100-7864
JB

Please prepare a US patent application for the subject invention disclosure and file the application in the USPTO within two months of this letter. A copy of the Invention Disclosure is enclosed.

Please follow the instructions set forth in AMD's DIRECTIONS TO OUTSIDE COUNSEL REGARDING PREPARATION AND PROSECUTION OF PATENT APPLICATIONS Version 1.0 dated May 1, 1996.

It is not necessary to prepare a PCT international application at this time. If one is later determined to be needed, AMD will so advise you.

If you have any questions or need additional information, please call me at 512-602-5964, or the responsible AMD Technology Law attorney, PAUL S. DRAKE at 512-602-2103.

Sincerely,

Samantha Cardona
Paralegal
Technology Law Department

Enclosure

cc:

LENSING, KEVIN R. MARKLE, RICHARD J. 65702 (TX)
WRIGHT, MARILYN STIRTON, JAMES BROCK

MAY NEED MORE DISCUSSIONS

#17

11/02/00

AMD INVENTION DISCLOSURE

TLD ID#

TT 4355

Rec'd date

California x42110, return to MS68,

Texas x55964 return to MS562,

Dresden x83401 Silke Kretzschmar at MS E21-PP.

Project: ☐, Product: ☐, Process: ☐, Technology ☐, to which the invention applies (identify):

List 2 to 5 key words useful to search by to find patents or art related to this invention:

SCATTEROMETRY, CONTACT VIA

Working title of invention: ~~NEW INVENTION~~ ^{ARM 11/02/00} GRATING STRUCTURES FOR USE IN SCATTEROMETRY FOR CONTACTS & VIAS

Inventor's signature: RICK MARKLE date: 11/02/00

Inventor's printed full name: _____ Citizenship: _____

Employee #: _____ Extension: 56316 Mail stop: _____ Home telephone: () _____

AMD email address: _____ AMD office FAX: () _____

Division: _____ Directorate: _____ Dept #: _____ Dept: _____ Manager: _____

Residence address: _____

Post Office address: _____

Co-Inventor's signature: Kevin Lensing date: _____

Co-Inventor's printed full name: _____ Citizenship: _____

Employee #: _____ Extension: _____ Mail stop: _____ Home telephone: () _____

AMD email address: _____ AMD office FAX: () _____

Division: _____ Directorate: _____ Dept #: _____ Dept: _____ Manager: _____

Residence address: _____

Post Office address: _____

Co-Inventor's signature: Broc Shiron date: _____

Co-Inventor's printed full name: _____ Citizenship: _____

Employee #: _____ Extension: _____ Mail stop: _____ Home telephone: () _____

AMD email address: _____ AMD office FAX: () _____

Division: _____ Directorate: _____ Dept #: _____ Dept: _____ Manager: _____

Residence address: _____

Post Office address: _____

Marilyn Wright

List on additional sheet if there are more co-inventors and list total number of inventors here: _____

Name(s) of attorney(s) preferred by inventor(s) to prepare patent application, if known: _____

DOCKETING

Witness 1 initial: _____

Witness 2 initial: _____

AMD INVENTION DISCLOSURE

TLD ID#

Rec'd date

California x42110, return to MS68,

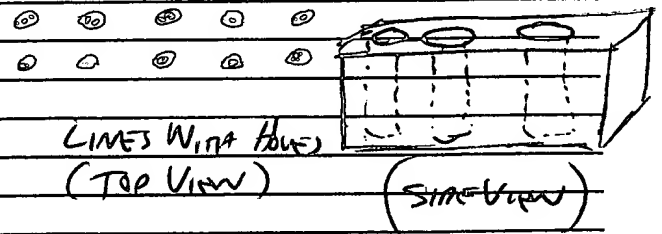
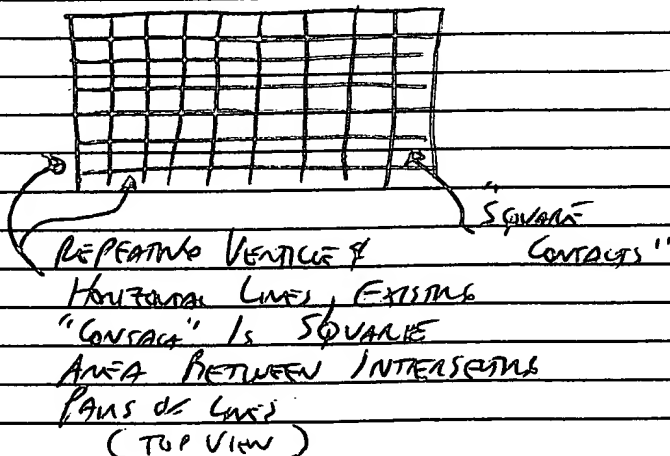
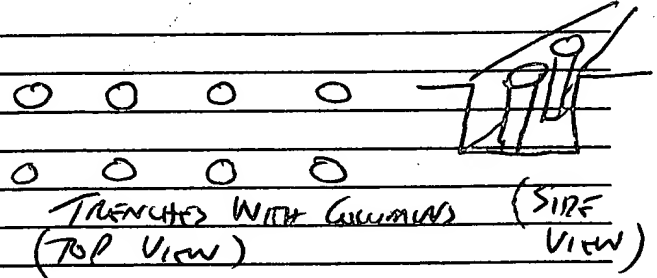
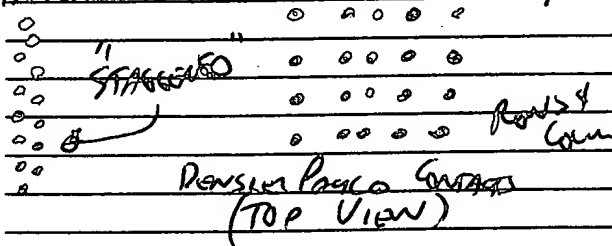
Texas x55964 return to MS562,

Dresden x83401 Silke Kretzschmar at MS E21-PP.

Identify known relevant art (patents, publications, products): CURRENTLY NO KNOWN RELEVANT ART IS AVAILABLE FOR APPLYING SCATTEROMETRY TO NON-LINEAR FEATURES.

State the problem solved by this invention: CONTACTS AND VIA CDS, PROFILES, DEPTHS, AND FILM THICKNESS AT THE BOTTOM ARE CRITICAL PROCESS PARAMETERS. NO METROLOGY MEASURING DIRECTLY IS SUCCESSFUL, ESPECIALLY WITH HIGH ASPECT RATIOS ON DRILL HOLES. SCATTEROMETRY COULD BE USED IF THE PROPER FEATURE WERE AVAILABLE RELATIVE TO CONTACTS OR VIAS.
 Brief description and/or sketch of invention (please attach copies of AMD patent notebook pages, reports or drawings): A NEW FEATURE THAT PROVIDES THE REQUIRED REPEATABLE PATTERNS NEEDED FOR SCATTEROMETRY DIFFRACTION GRATINGS AND BETTER SIMULATES THE PROCESS CONDITIONS OF CONTACTS AND VIAS IS PROVIDED.

NON-LINEAR PATTERNS INCLUDE DENSELY PACKED MATRICES OF CONTACTS, INTERSECTING LINES FORMING "SQUARE CONTACTS", AND TRENCHES WITH GUMMIES & LINES WITH HOLES



Patent notebook # _____ Page numbers _____ Number of drawings _____

Witness 1 initial: _____ Witness 2 initial: _____

AMD INVENTION DISCLOSURE

TLD ID# _____

Rec'd date _____

California x42110, return to MS68,

Texas x55964 return to MS62,

Dresden x83401 Silke Kretzschmar at MS E21-PP.

Advantages (check all that apply):

<input type="checkbox"/> avoids existing patent(s)	<input type="checkbox"/> improves precision	<input type="checkbox"/> simplifies manufacturing
<input type="checkbox"/> new function	<input type="checkbox"/> improves accuracy	<input type="checkbox"/> improves wear characteristic
<input type="checkbox"/> improves density	<input type="checkbox"/> improves efficiency	<input type="checkbox"/> improves signal to noise ratio
<input type="checkbox"/> increases operating speed	<input type="checkbox"/> fewer component parts	<input type="checkbox"/>
<input type="checkbox"/> improves reliability	<input type="checkbox"/> reduces cost of manufacturing	<input type="checkbox"/>

Discussion of advantage of the invention over other solutions

(emphasize technical advance in the art as measured against known art): CURRENTLY SEMICONDUCTOR
REQUIRES LINEAR REPEATING STRUCTURES (LINES). BY USING CLOSE PACKED
CONTACTS A "LINE" OF HOLES WOULD RESULT IN SUCCESSFUL MEASUREMENT
OF CONTACT VIA CONDUITS.

First written description* of invention, date: <u>11/02/00</u>	First external disclosure to (name):
Date of first drawing*: <u>11/02/00</u>	Date of first external disclosure, none <input type="checkbox"/>
Date invention first reduced to practice:	External disclosure under NDA* No <input type="checkbox"/> Yes <input type="checkbox"/>
Made by (name):	First external disclosure or use by: presentation <input type="checkbox"/> ,
Tested by (name):	announcement <input type="checkbox"/> , sample <input type="checkbox"/> , sale <input type="checkbox"/> , other <input type="checkbox"/>
Date of first computer simulation:	Date of Non-Disclosure Agreement*, if any:
Date of first successful test:	Date of first publication*:
any of above occurred outside of USA <input type="checkbox"/>	Publication name:
* attach copy if possible	Date of first commercial use:

Does plan exist to publish, disclose or sell? If so, where and when? NONE CURRENTLYWas invention conceived, constructed or tested pursuant to the performance under a development contract with another company: No ☒ Yes ☐. If yes, company name _____

If yes, name of AMD business contact and contract no. _____

Was invention jointly developed with participation of inventors from outside AMD: No ☐, Yes ☐.

If yes, Company name _____

I have read and understood this disclosure and read and signed each page of the attachments:

Witness 1 signature: _____	Date: _____
Printed name: _____	Employee #: _____
Witness 2 signature: _____	Date: _____
Printed name: _____	Employee #: _____

After completing to this point, deliver to department reviewer: date delivered _____

Witness 1 initial: _____ Witness 2 initial: _____

AMD INVENTION DISCLOSURE

TLD ID# _____

Rec'd date _____

California x42110, return to MS68,

Texas x55964 return to MS562,

Dresden x83401 Silke Kretzschmar at MS E21-PP.

DISCLOSURE EVALUATION (*Entries from this point on are by the Reviewer*)

Does this invention add value to the AMD intellectual property portfolio? Yes ☐, No ☐,
Explain: _____

Do you know of any relevant art? Yes ☐, No ☐, If yes, attach a copy and explain: _____

What application(s) do you foresee for this invention? _____

I estimate the Value* of this invention disclosure is A ☐, B ☐, C ☐, D ☐,

* use worksheet "Valuing Invention Disclosures and Patents".

it is ☐, is not ☐ recommended to AMD for U.S. patent application filing,

it is ☐, is not ☐ recommended to AMD for foreign patent application filing,

it is ☐, is not ☐ recommended to be held as an AMD trade secret,

Give this high priority ☐, normal ☐, low priority ☐, in patent application writing.

GUIDELINES AND CONSIDERATIONS FOR FOREIGN FILING DECISION

Filing foreign patent applications is costly. We should choose to do it only when conditions warrant.

ALL CONDITIONS BELOW MUST APPLY IN ORDER TO INITIATE A FOREIGN FILING:

- *Invention is High-Valued (A, B)*, and*
- *Invention is in our technology path (usage), and*
- *Invention usage is detectable by inspection of product, and*
- *Invention is relatively hard to design around, and*
- *Competitor is operating in the country of interest. (see ca000000.xls tabulation of "Factory Sites outside the USA .)*

I recommend filing patent applications in foreign countries checked below:

Japan <input type="checkbox"/>	S.Korea <input type="checkbox"/>	Taiwan <input type="checkbox"/>	U.K. <input type="checkbox"/>	France <input type="checkbox"/>	Germany <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

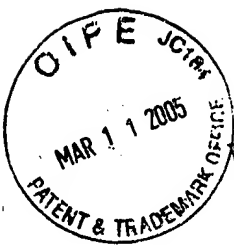
Reviewer's signature: _____ Employee #: _____ Date: _____

Reviewer's printed name: _____

If foreign filing is checked, route to Div. VP for signature.

VP or Designate approves foreign filing (signature) _____

Reviewer: Complete this page and send disclosures to TLD for patent application filing.



WILLIAMS, MORGAN & AMERSON, P.C.

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Mark D. Moore, Ph.D.*
Louis H. Iselin, Ph.D.*
Raymund F. Eich, Ph.D.*
Thomas H. Belvin, Jr.*
Daren C. Davis*
Stephanie A. Wardwell, Ph.D.*

*Patent Agent

June 12, 2001

FILE: 2000.089400

WRITER'S DIRECT DIAL:
608-833-0748

Richard J. Markle
Kevin R. Lensing
J. Broc Stirton
Marilyn I. Wright
AMD, Inc.
5204 E. Ben White Blvd.
Mailstop 568
Austin, TX 78741

RE: *U.S. Patent Application Entitled: "METHOD AND APPARATUS FOR
DETERMINING GRID DIMENSIONS USING SCATTEROMETRY"*
Inventor(s): Richard J. Markle, et al.
Your Reference: TT4865

Dear Sirs and Madam:

Attached is the draft application for the above-referenced matter. Please provide me with your comments at your earliest convenience. Please spend sufficient time reviewing the entire application so that you understand the content of the application, including each of the claims. You should make sure that the application enables one skilled in the art to make and use the invention and that it discloses the best mode of which you are aware for carrying out the invention.

If the application is inaccurate or incomplete, please mark your changes directly on the application itself and return it to me for revision. Please provide any and all feedback directly to my attention as soon as possible.

In reviewing the application, and especially the claims, keep in mind any relevant prior art of which you are aware. It is important that the claims accurately define your invention and that the

Richard J. Markle

June 12, 2001

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claims distinguish over the prior art. If any prior art comes to your attention now or during the pendency of the application, please send it to me.

We would like to take this opportunity to address several important matters:

1. Information Disclosure Statement

As we have discussed, a duty of candor and good faith toward the Patent Office rests on the inventors and on every other individual who is substantively involved in the preparation or prosecution of a patent application. All such individuals have a duty to disclose to the Office known information that may be material to the patentability of a pending claim. Such information is material to patentability when: (1) it establishes, by itself or in combination with other information, a *prima facie* case of unpatentability; or (2) it refutes, or is inconsistent with a position the applicant takes in (a) opposing an argument of unpatentability relied on by the patent examiner, or (b) asserting an argument of patentability.

An Information Disclosure Statement should therefore be filed in the Patent Office within about three months of the filing date of the patent application to comply with this duty of disclosure, listing material publications or pertinent information of which you are aware. This includes:

- (a) products or services in public use or on sale in this country prior to your U.S. filing date;
- (b) all related material (including international patent applications) published in this country or a foreign country prior to your U.S. filing date;
- (c) any related U.S. patents; and
- (d) any pertinent applications published prior to your filing date.

We request that you supply us with copies of all material prior art references of which you are aware and any other information which should be disclosed to the Patent Office. We would like to file the Information Disclosure Statement within 3 months of the filing date, so we need you to supply the copies to us about a month prior to that time. Please feel free to call me if you have any questions as to what should be included.

2. Continuing Duty of Candor

We would like to emphasize that the duty of candor does not cease once the Information Disclosure Statement has been filed. The duty remains throughout examination of the patent application. Therefore, if any additional information of relevance comes to your attention during examination of this patent application, it is important that you advise us immediately so that such information can be submitted to the Patent Office.

Richard J. Markle

June 12, 2001

Page 3

Furthermore, for as long as any patent that may be granted on this patent application is of value to you, we recommend that you keep us advised of any relevant information that comes to light. We can then consider such and advise on options such as limiting the claims to avoid such prior art by filing an application for a reissue patent or an application for reexamination.

3. Developments and Improvements

It is important that you advise us promptly of any developments or improvements that may affect the uses or value of this invention. You should insure, in particular, that you advise us of such developments or improvements before any disclosure or public use has occurred. If such developments or improvements are of sufficient importance, it may be possible, and indeed advisable, to take immediate steps to secure specific protection for such developments or improvements. This could be done by filing a continuation-in-part patent application, or by filing a new independent patent application, both of which probably require administrative approval.

4. Examination

In general, an Examiner reviews applications in the order in which they are received. A first office action may be issued within a year, although the time period may vary.

5. Marking

In commercial exploitation of this invention, it is advisable to mark articles and literature relating to the invention to indicate that a patent application is pending. The notation "Patent Pending" or "Patent Applied For" may be used in connection with any product covered by any claim of the application. This notation may also be used in any advertising, business literature or scientific publication. Products or methods relating to claims in the patent application may be conveniently identified in footnotes as being subjects of one or more pending patent applications. It is usually advisable, however, not to disclose the serial number or filing date of the patent application while it is still pending.

6. Corresponding Patent Protection in Other Countries

The United States and many other countries are parties to an international treaty called the Paris Convention. Under this treaty you may file a corresponding patent application in any of these other countries and claim the benefit of your United States filing date, provided that the corresponding application is filed within one year from the day on which your United States application was filed. Certain events might have occurred or may occur that will require corresponding foreign applications to be filed before the end of this one-year convention period.

WILLIAMS, MORGAN & AMERSON, P.C.

Richard J. Markle

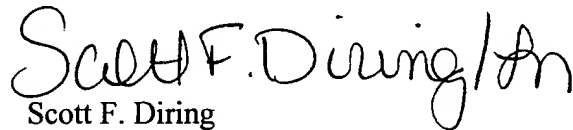
June 12, 2001

Page 4

Unless you have concluded that you do not want any corresponding foreign patent applications, you should take this matter up with us as soon as possible. We can then discuss the benefits, requirements, filing procedures, and costs of foreign coverage.

If we can be of further assistance, or if you have any questions concerning the patent application, the preparation of an Information Disclosure Statement, or any of the above topics, please contact us at your convenience.

Regards,

A handwritten signature in black ink that reads "Scott F. Diring/An". The signature is written in a cursive, flowing style.

Scott F. Diring
Patent Agent

SFD/ln

Encl: Appln.

cc: Paul S. Drake, Esq. (w/encl.)
Shawn Smith, Docketing